

The opinion in support of the decision being entered today was not written for publication and is not binding precedent of the Board.

Paper No. 35

UNITED STATES PATENT AND TRADEMARK OFFICE

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BEFORE THE BOARD OF PATENT APPEALS  
AND INTERFERENCES

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Ex parte JOO-NYUNG JANG and KYUNG-HO KWACK

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Appeal No. 1999-2250  
Application No. 08/980,308

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HEARD: May 22, 2002

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Before KRASS, RUGGIERO, and DIXON, Administrative Patent Judges.

KRASS, Administrative Patent Judge.

DECISION ON APPEAL

This is a decision on appeal from the final rejection of claims 1 and 3-11, all of the pending claims.

The invention is directed to an optical wavelength filter and multiplexer best illustrated by reference to representative independent claim 1, reproduced as follows:

1. An optical wavelength filter, comprising:

first optical means having first, second and third ports for receiving an input optical signal having a plurality of wavelength components at the first port, for directing the input optical signal to the second port, for receiving a reflected optical signal returning to the second port, and for directing the reflected optical signal to the third port; and

second optical means having a fourth port connected directly to the second port of the first optical means for directly receiving the input optical signal directed to the second port and for reflecting only a predetermined wavelength component of the input optical signal received via the fourth port, said reflected predetermined wavelength component comprising the reflected optical signal returning to the second port, said second optical means having a fifth port and passing other wavelength components of the input optical signal to the fifth port;

wherein the second optical means comprises a fiber Bragg grating reflection filter for making a refractive index difference with a grating period having regular intervals using light interference, and for reflecting only the predetermined wavelength component backward from a light traveling direction.

The examiner relies on the following references:

Chawki et al. [Chawki]	5,726,785	Mar. 10, 1998 (filed Feb. 21, 1996)
Painchaud et al. [Painchaud]	5,748,814	May 05, 1998 (filed Nov. 16, 1995)

Claims 1 and 3-11 stand rejected under 35 U.S. C. § 103 as unpatentable over Chawki and Painchaud.

Reference is made to the briefs and answer for the respective positions of

appellants and the examiner.

### OPINION

With regard to independent claim 1, it is the examiner's position that Chawki discloses the claimed subject matter but for the fiber Bragg grating reflection filter having a grating period with regular intervals.

The examiner points to Figure 1 of Chawki and identifies C1 as the claimed "first optical means," and the combination of AO and MS as the claimed "second optical means." The examiner employs Painchaud for the teaching of making Bragg grating filters, specifically identifying column 3, lines 23 et seq. for the proposition that the period P of the fiber Bragg grating is changeable by controlling the tilt angle and the beam incidence angle, concluding that these angles can be fixed and that it is "possible" the period P has regular intervals [answer-page 4].

The examiner concludes that it would have been obvious to modify Chawki's "device to include the fiber Bragg grating having a regular intervals period to select single wavelength" [sic, answer-page 4].

Appellants' response is a twofold argument. First, appellants argue, the cited prior art does not disclose or suggest an optical wavelength filter wherein a second

optical means has a fourth port connected *directly* to the second port of a first optical

means. Appellants' second argument is that the cited prior art does not disclose or suggest a second optical means comprising a fiber Bragg grating reflection filter having the characteristics recited in the last paragraph of the claim.

With regard to appellants' first argument, we disagree. It is true that claim 1 requires the fourth port to be "connected directly to the second port" of the optical means and Figure 1 of Chawki clearly shows amplifying medium AO connected between the fourth port and the second port so that the instant claim language would not appear to be met by this teaching of Chawki. However, at column 5, lines 11-14, of Chawki, the reference makes clear that in an unshown embodiment, medium AO is "placed between the grating RN and the circulator C2 *instead* of between the circulator C1 and the grating R1" [emphasis added]. Thus, in this alternative embodiment described by Chawki, there is no amplifying medium AO between circulator C1 and the second optical means, i.e., the fourth port of the second optical means is, indeed, connected *directly* to the second port of the first optical means, as claimed.

With regard to the fiber Bragg grating reflection filter for making a refractive index difference "with a grating period having regular intervals using light interference," we note that the only mention of this limitation in the original disclosure appears in

original claims 2 and 7. In any event, appellants argue that because Chawki discloses

a programmable Bragg grating, it has a variable interval period, thus teaching away from an arrangement having a regular, or fixed, interval period, as claimed. With regard to the application of Painchaud, appellants argue that there is no suggestion in Chawki that would have led the artisan to modify the arrangement of Chawki in any manner suggested by Painchaud. Moreover, argue appellants, the abstract of Painchaud indicates that the period of a Bragg filter is controlled such that the “period P of the interference pattern may be altered...,” thus also teaching away from the instant claimed invention wherein the Bragg grating reflection filter has a grating period “having regular intervals.”

Merely because Chawki discloses “programmable” gratings, this does not teach away from the instant claimed invention. A grating may be programmable yet still have a regular interval period, as claimed. After all, appellants argue that his grating period has “regular intervals” yet the instant specification discloses “periodically varying the refractive index” of a fiber [page 9, lines 13-14].

Moreover, Chawki also discloses an alternative embodiment, at column 5, lines 41-45, wherein the multiplexer “only comprises a single photoinduced Bragg grating, which is set to the corresponding wavelength...without having any need for a control

means.” Accordingly, it would appear that in such an embodiment, if there is no need

for a control means because the Bragg grating is “set” to a single, corresponding wavelength, then the setting which gives rise to the wavelength as a result of a grating period with a regular interval would meet the claimed limitation. The problem, however, from the standpoint of obviousness, within the meaning of 35 U.S. C. § 103, is the question of what would have suggested setting the Bragg grating in Chawki to a grating period with a regular interval. There is no teaching or suggestion in Chawki for so setting the Bragg grating. The examiner recognizes this deficiency in applying Painchaud. But the examiner’s reasoning here is that Painchaud teaches that the period  $P$  of a Bragg grating is changeable by controlling the tilt angle and the beam incidence angle. Therefore, reasons the examiner, these angles *can* be fixed and it is *possible* the period has regular intervals. The examiner also contends that “[i]t is clear and well known in the art that regular interval period of wave is to select single wavelength and “altered” interval period of wave is to vary pitch to select different wavelength” [sic, answer-page 4].

Appellants challenge this last statement of what is “clear and well known” and the examiner has failed to convincingly respond to such challenge since no evidence was proffered by the examiner to establish that which is alleged to be “clear and well

known.” Moreover, the examiner’s reliance on the allegation that the angles in

Painchaud *can* be fixed and that it is *possible* the period has regular intervals amounts to no more than speculation based on hindsight since the examiner has pointed to nothing in the applied references which would have suggested fixing the angles of tilt and beam incidence in such a manner as to create a Bragg grating reflection filter “with a grating period having regular intervals.” Merely because something *can* be done (of course, it *can* be done because appellants did it) does not make it, per se, obvious to do it, within the meaning of 35 U.S. C. § 103.

Accordingly, since we find that the examiner has failed to present a prima facie case of obviousness with regard to independent claim 1, we will not sustain the rejection of claims 1 and 3-5 under 35 U.S. C. § 103.

Turning, now to independent claim 6, this claim does not contain the “grating period having regular intervals” language of independent claim 1 but does require that there be a *plurality* of first optical devices and a *plurality* of second optical devices.

It is the examiner’s position that it would have been obvious to have more than one first and second optical devices in Chawki because this is “mere duplication of the essential working parts of a device” and, as such, involves only “routine skill in the art.”

Appellants argue the “direct” connection aspect of claim 6, but we are

unconvinced by this argument for the reasons supra, with regard to independent claim 1.

With regard to the “duplication of parts” argument by the examiner, appellants disagree. In appellant’s view, Chawki’s circulator C1 is not identical to circulator C2, the first being a subtracting circulator and the latter being an adding circulator, which means that the artisan would not have been led to duplicate circulator C1 and deploy it on the right side of the Bragg grating arrangement in Figure 1 since this would contradict the disclosed deployment of the adding circulator C2 on the right side of the grating arrangement.

While the examiner does not respond to this argument, we are unconvinced by appellants’ argument because the examiner is not suggesting “flipping” the circulators C1 and C2 from one side of the Bragg grating to the other. Rather, the examiner is merely suggesting duplicating the arrangement in Figure 1 of Chawki so that there are a plurality of each of the circulators and Bragg gratings in redundant channels, for example.

Without some specific reason contra, it would have been obvious, generally, to duplicate elements of the prior art. Appellants have provided no reason why it would

not have been obvious to duplicate that already taught by Chawki so that there are



redundant channels of first and second optical means. No advantages are taught or argued by appellants that would not naturally flow from the duplication of elements taught by Chawki.

However, the demultiplexer of claim 6 does not merely duplicate the elements of the filter of claim 1. Claim 6 specifically requires that each fifth port be connected directly to the first port of “another corresponding first optical device” and that there be a passing of “other wavelength components of the respective input optical signal directly to said first port of said another corresponding first optical device connected directly to the fifth port.” Accordingly, there is a specific interconnection between the various units of first and second optical devices, a concatenation which is simply not shown or suggested by the applied references.

Accordingly, we will not sustain the rejection of independent claim 6 under 35 U.S. C. § 103.

Claims 7-9 stand with independent claim 6 but, even so, these claims contain the “grating periods having regular intervals” limitation, and we will not sustain the rejection of these claims under 35 U.S. C. § 103 for the reasons supra.

Appellants do not separately argue the limitations of claim 10 but it will stand with

its independent claim 6.

With regard to claim 11, even though this claim stands with independent claim 6, this claim also specifically requires that “the total power loss is 2dB due to insertion loss in the circulator.” The examiner contends that this limitation is inherently taught by Chawki. The examiner gives no explanation as to why it is believed that this limitation is inherently taught by Chawki and, in fact, the inherency allegation is challenged by appellants. The examiner’s response is to state that “if two device [sic, devices] are constructed in the same way with the same elements, then the characteristics of the two device [sic, devices] would be identical, therefore, the inherency reasoning of the rejections are maintained” [answer-page 7].

The fallacy with the examiner’s reasoning is that there is no evidence that the devices of appellant and of Chawki are “constructed in the same way with the same elements.” While the broadly claimed recitations of first and second “optical elements” may be met by Chawki, it does not mean, per se, that the elements of Chawki are constructed in the “same manner” as appellants’ so as to result in a “total power loss” of “2dB.”

Therefore, we will not sustain the rejection of claim 11 under 35 U.S. C. § 103.

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CONCLUSION

We have not sustained the rejection of claims 1 and 3-11 under 35 U.S. C.  
§ 103.

Accordingly, the examiner's decision is reversed.

REVERSED

ERROL A. KRASS  
Administrative Patent Judge

JOSEPH F. RUGGIERO  
Administrative Patent Judge

JOSEPH L. DIXON  
Administrative Patent Judge

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